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EXAMINER

NGUYEN, LAUREN

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2871

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed on 06/16/2008 have been fully considered but they are not persuasive.
2. The applicant argues (see page 10) regarding **claims 1 and 18** that the Masahide stress relief heat treatment is performed on *an already curved panel* and does not *formed a curved surface* due to release of force to contract the pre-tensioned surface. This is irrelevant and not persuasive. Nowhere in the Office Action dated 03/18/2008 stated the heat treatment is performed to form the curved surface. In fact, **Masahide** (figures 11-12) discloses releasing the force to contract the pre-tensioned surface and form a curved surface of the curved flat panel display device (in order to use the LCD device or perform the next manufacturing step, the exhaust air pump P or the stage 41 has to be taken out of the curved LCD after its formation. Therefore, the force is released).
3. The applicant argues (see pages 11-12) regarding **claims 1 and 18** that the Oshikawa substrate 20 m, which is subjected to thermal expansion process before adhesion, is not under any tension and does not form any pre-tensioned surface. This is not persuasive. The substrate (20), placed in an expanding state by a thermal expansion process, forms a pre-tensioned surface as it expands (see at least column 2, lines 45-68 and column 3, lines 1-25). The claimed language does not require a mechanical force being applied to the non-precurved film nor the force being released after the formation of the second substrate, thus heating and cooling are ways to apply force to the substrate to form a pre-tensioned surface and to release the force.

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4. The claim language therefore does not patentably distinguish over the applied reference[s], and the previous rejections are maintained.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. **Claims 1-2, 6-7, 18-19, 22-25** are rejected under 35 U.S.C. 102(b) as being anticipated by **Masahide et al. (JP 2002-014359)**.

7. With respect to **claim 1, Masahide** (figures 11-12) discloses a method of manufacturing a curved flat panel display device, comprising the act of providing two films including a first non-precurved film and a second non-precurved film (P1 and P2); pre-tensioning the second non-precurved film by a force (using pump P or the stage 41) to form a pre-tensioned surface (P1); adhering the first non-precurved film (P2) to the pre-tensioned surface; and releasing the force to contract the pre-tensioned surface and form a curved surface of the curved flat panel display device (In order to use the LCD device or perform the next manufacturing step (stress relief heat treatment, figure 7, see at least paragraph 0197), the exhaust air pump P or the stage 41 has to be taken out of the curved LCD after its formation. Therefore, the force is released).

8. With respect to **claim 2, Masahide** (figures 11-12) discloses one of said two films is a display layer exhibiting display functionality (P1 or P2, see at least paragraph 0180) and another of said two films is an additional film.

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9. With respect to **claim 6, Masahide** (figures 11-12) discloses said additional film is arranged to be adhered to one of an intended I inner or outer side of the curved flat panel display (P1, P2).

10. With respect to **claim 7, Masahide** (figures 11-12) discloses said adhering of the additional film to the display film is done by means of laminating (see at least paragraph 0192).

11. With respect to **claim 18, Masahide** (figures 11-12) discloses a method of manufacturing a curved flat panel display device, comprising the step of: providing a first film (P1), applying a force to the first film to form a pre-tensioned surface (using pump P or the stage 41) to form a pre-tensioned surface (P2); adhering the second film (P2) to the pre-tensioned surface of the first film (P1); and releasing the force to contract the pre-tensioned surface and form a curved surface of the curved flat panel display device (In order to use the LCD device or perform the next manufacturing step (stress relief heat treatment, figure 7, see at least paragraph 0197), the exhaust air pump P or the stage 41 has to be taken out of the curved LCD after its formation. Therefore, the force is released).

12. With respect to **claim 19, Masahide** (figures 11-12) discloses one of the first and second films is a display layer exhibiting display functionality, and another of the first and second films is an additional film (P1 or P2).

13. With respect to **claim 22, Masahide** (figures 11-12) discloses the step of applying the force comprises the step of applying a bending force to bend the second film to a position for the adhering step to adhere the second film to the surface of the first film (see at least paragraph 0193).

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14. With respect to **claim 23, Masahide** (figures 11-12) discloses the additional film is arranged to be adhered to one of an intended inner or outer side of the curvature of the curved flat panel display device (P1 and P2).

15. With respect to **claim 24, Masahide** (figures 11-12) discloses said adhering of the additional film to the display film is done by means of laminating (N, see at least paragraph 0192).

16. With respect to **claim 25, Masahide** (figures 11-12) discloses said additional film is arranged substantially along an edge of the display layer (P1 and P2, figure 12).

17. **Claims 1-2, 6-7, 18-19, 21, 23-25, 28-30** are rejected under 35 U.S.C. 102(b) as being anticipated by **Oshikawa (US 5,273,475)**.

18. With respect to **claim 1, Oshikawa** (figures 1-5) discloses a method of manufacturing a curved flat panel display device, comprising the act of providing two films including a first non-precurved film and a second non-precurved film (20 and 30); pre-tensioning the second non-precurved film by a force to form a pre-tensioned surface (20; see at least column 2, lines 45-68 and column 3, lines 1-25); adhering the first non-precurved film (30) to the pre-tensioned surface; and releasing the force to contract the pre-tensioned surface and form a curved surface of the curved flat panel display device (20; see at least column 2, lines 45-68 and column 3, lines 1-25).

19. With respect to **claim 2, Oshikawa** (figures 1-5) discloses one of said two films is a display layer exhibiting display functionality (20 or 30) and another of said two films is an additional film.

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20. With respect to **claim 6, Oshikawa** (figures 1-5) discloses said additional film is arranged to be adhered to one of an intended inner or outer side of the curved flat panel display (20 or 30).

21. With respect to **claim 7, Oshikawa** (figures 1-5) discloses said adhering of the additional film to the display film is done by means of laminating (see at least column 2, lines 45-68 and column 3, lines 1-25).

22. With respect to **claim 18, Oshikawa** (figures 1-5) discloses a method of manufacturing a curved flat panel display device, comprising the step of: providing a first film (20), applying a force to the first film to form a pre-tensioned surface to form a pre-tensioned surface (20; see at least column 2, lines 45-68 and column 3, lines 1-25); adhering the second film (30) to the pre-tensioned surface of the first film (20); and releasing the force to contract the pre-tensioned surface and form a curved surface of the curved flat panel display device (see at least column 2, lines 45-68 and column 3, lines 1-25).

23. With respect to **claim 19, Oshikawa** (figures 1-5) discloses one of said two films is a display layer exhibiting display functionality (20 or 30) and another of said two films is an additional film.

24. With respect to **claim 21, Oshikawa** (figures 1-5) discloses the step of applying the force comprises the step of uni-axially stretching the first film (20 and 30; see at least column 2, lines 45-68 and column 3, lines 1-25).

25. With respect to **claim 23, Oshikawa** (figures 1-5) discloses the additional film is arranged to be adhered to one of an intended inner or outer side of the curved flat panel display (20 or 30).

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26. With respect to **claim 24, Oshikawa** (figures 1-5) discloses said adhering of the additional film to the display film is done by means of laminating (see at least column 2, lines 45-68 and column 3, lines 1-25).

27. With respect to **claim 25, Oshikawa** (figures 1-5) discloses said additional film is arranged substantially along an edge of the display layer (20 or 30).

28. With respect to **claim 28, Oshikawa** (figures 1-5) discloses a method of manufacturing a curved flat panel display device, comprising the act of providing two films including a first non-precurved film and a second non-precurved film (20 and 30); pre-tensioning the first non-precurved film by a force to form a stretched film (20; see at least column 2, lines 45-68 and column 3, lines 1-25); adhering together the stretched film and the second non-precurved film so that the two films are held in a curved shape by the adhering act (20 and 30; see at least column 2, lines 45-68 and column 3, lines 1-25); and releasing the force to contract the stretched film and form a curved surface of the curved flat panel display device (end the thermal expansion process).

29. With respect to **claim 29, Oshikawa** (figures 1-5) discloses the act of pre-tensioning the non-precurved first film comprises the act of uni-axially stretching the non-precurved first film (20 and 30; see at least column 2, lines 45-68 and column 3, lines 1-25).

30. With respect to **claim 30, Oshikawa** (figures 1-5) discloses the stretched film is arranged substantially along an edge of non-precurved second film (20 and 30).

Claim Rejections - 35 USC § 103

31. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

32. **Claim 21** is rejected under 35 U.S.C. 103(a) as being unpatentable over **Masahide et al.** in view of **Yamamoto et al. (US 4,592,623)**.

33. With respect to **claim 21**, **Masahide et al.** discloses the limitations as shown in the rejection of **claim 18** above. However, **Masahide et al.** fails to teach the limitations of **claim 21**. **Yamamoto et al.** (in at least column 5, lines 31-34) teaches the step of applying the force comprises the step of uni-axially stretching the first film. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of manufacturing a curve flat panel display device of **Masahide et al.** with the uniaxially stretch method of **Yamamoto et al.** because such modification would impart the corrosion resistance against chemicals to the films.

34. **Claims 26-27 and 31-32** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Masahide** in view of **Hashimoto et al. (US 2002/0003711)**.

35. With respect to **claims 26-27**, **Masahide** discloses the limitations as shown in the rejection of **claim 25** above. However, **Masahide** does not disclose the limitations of **claims 26-27**. **Hashimoto et al.** (in at least paragraphs 0054 and 0059, figures 5-6) teaches the film has a first thickness near the edge, the first thickness being larger than a second thickness of the stretched film away from the edge (figures 6A-6B); and a thickness of said additional film (104 or 106) is selected to shift a plane of substantially zero tensile or compressive stress of the curved flat panel display device upon bending of the curved flat panel display device to a desired plane. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the

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invention to modify the film as taught by **Oshikawa** because such modification would provide sufficient brightness to the display device.

36. **Claims 26-27 and 31-32** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Oshikawa** in view of **Hashimoto et al. (US 2002/0003711)**.

37. With respect to **claims 26-27**, **Oshikawa** (figures 1-5) discloses the limitations as shown in the rejection of **claim 25** above. However, **Oshikawa** does not disclose the limitations of **claims 26-27**. **Hashimoto et al.** (in at least paragraphs 0054 and 0059, figures 5-6) teaches the film has a first thickness near the edge, the first thickness being larger than a second thickness of the stretched film away from the edge (figures 6A-6B); and a thickness of said additional film (104 or 106) is selected to shift a plane of substantially zero tensile or compressive stress of the curved flat panel display device upon bending of the curved flat panel display device to a desired plane. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the film as taught by **Oshikawa** because such modification would provide sufficient brightness to the display device.

38. With respect to **claims 31-32**, **Oshikawa** (figures 1-5) discloses the stretched film is adhered to an edge of the non-precurved second film. However, **Oshikawa** does not disclose the remaining limitations of **claims 31-32**. **Hashimoto et al.** (in at least paragraphs 0054 and 0059, figures 5-6) teaches the film has a first thickness near the edge, the first thickness being larger than a second thickness of the stretched film away from the edge (figures 6A-6B); and a thickness of the first non-precurved film (104 or 106) is selected to shift a plane of substantially zero tensile or compressive stress of the curved flat panel display device upon bending of the curved flat panel display device to a desired plane. Therefore, it would have been obvious to one

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of ordinary skill in the art at the time of the invention to modify the film as taught by **Oshikawa** because such modification would provide sufficient brightness to the display device.

Conclusion

39. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

40. A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lauren Nguyen whose telephone number is (571) 270-1428. The examiner can normally be reached on M-F, 7:30-5:00 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Nelms can be reached on (571) 272-1787. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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/L. N./

Examiner, Art Unit 2871

/David Nelms/

Supervisory Patent Examiner, Art Unit 2871